

**PROPOSED EDITS TO NTIA DRAFT PROPOSAL ON WRC-15 AI 10
(REF. WAC/080(27.08.14))**

DRAFT

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 10

Agenda Item 10: *to recommend to the Council, items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention*

Background Information: ~~Increasing demand for broadband data capacity is leading the industry to increasingly rely on opportunities for off-loading from traditional cellular networks onto Radio Local Area Network (RLAN) and small-celled wireless infrastructure. Additionally, there is strong demand for inexpensive, widely available, high-speed internet access and networking capabilities. World Radiocommunication Conference 2003 allocated the 5 150-5 250 MHz, 5 250-5 350 MHz, and 5 470-5 725 MHz bands the Mobile Service for Wireless Access Systems (WAS) including Radio Local Area Network (RLAN) systems under the conditions specified in Resolution 229 (WRC-03). At the time, RLAN products used 20 MHz bandwidths to obtain physical layer (PHY) data rates up to 54 Mbps. Over time and in response to increasing performance requirements, there have been further developments.~~

~~Newer RLAN technologies are utilizing wider channels to meet evolving needs. For example, IEEE 802.11ac utilizes 80 MHz and 160 MHz wide channels to support very high throughput (500-1 000 Mbps) in the 5 GHz bands, ideal for applications like high-definition video as well as other high-bandwidth uses. IEEE 802.11ac products are required to support 20, 40, and 80 MHz channels, with the use of 160 MHz channels optional but supported by the standard as well.~~

~~The results of ITU-R studies indicate that the minimum spectrum requirement for RLAN using the 5 GHz frequency range in the year 2018 is estimated at 880 MHz. This figure includes spectrum of 455-580 MHz already utilised by non-IMT mobile broadband applications operating in the 5 GHz band range resulting in 300-425 MHz additional spectrum being required.¹~~

To address this demand ~~for greater network data capacity,~~ WRC-15 Agenda Item 1.1 considered additional primary mobile service allocations for terrestrial mobile broadband capabilities, including the possible expansion of RLAN use into the 5350-5470 MHz band. ~~The 5 350-5 470 MHz band is particularly attractive for RLANs for reasons that include:~~

- ~~• RLAN devices already operate in spectrum immediately adjacent to the 5 350-5 470 MHz band (i.e. 5 150-5 350 MHz and 5 470-5 725 MHz) subject to~~

¹ ~~The ranges above are due to some of the frequency bands being identified for RLAN only in some countries.~~

Resolution 229 (Rev.WRC-12). Equipment cost and complexity for development of RLAN devices in 5 350-5 470 MHz may be less complicated than other bands not adjacent to the existing RLAN bands.

- A new international allocation to the mobile service for 5 350-5 470 MHz would facilitate contiguous spectrum for RLANs, which would increase the number of non-overlapping channels available for use. The contiguous spectrum would enable two additional 80 MHz channels as well as one additional 160 MHz channel.

Initial studies conducted in Joint Task Group (JTG) 4-5-6-7 indicated that sharing was not possible between RLANs and incumbent services in the 5350-5470 MHz band utilizing existing mitigation measures. The existing mitigation techniques studied included a 200 mW power limit, indoor restriction, and Dynamic Frequency Selection (DFS) designed for the 5150-5350 MHz and 5470-5725 MHz frequency bands. Additionally, ~~the same~~ ITU-R Working Party 5A began exploring possible new mitigation techniques to enable sharing between RLANs and incumbent services in the 5350-5470 MHz frequency bands. Unfortunately, the WRC-15 study cycle provided insufficient time to complete the development and consideration of the proposed mitigation techniques and further study is required.

Given the increased demand for high throughput RLAN services, along with the need to ensure protection of important incumbent services, the United States of America proposes a ~~future WRC-19 -agenda item to continue the studies and consider additional mitigation measures that may enable sharing between RLANs and incumbent services in the~~ for an additional primary allocations to the mobile service allocation and identification for the implementation of wireless access systems (WAS) including radio local area networks (RLAN) in the 5350-5470 MHz frequency bands.

Proposal:

MOD USA/10/1

RESOLUTION 806 (WRC-15)

Agenda for the 2019 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2015),

ADD USA/10/2

1.[5 GHz] to consider, in accordance with Resolution [5GHz] (WRC-2015), ~~regulatory provisions and~~ additional spectrum allocations to the mobile service in the 5350-5470 MHz bands on a primary basis and related regulatory provisions to facilitate the development of terrestrial mobile broadband applications, taking into account the results of studies;

Reasons: To enable contiguous spectrum wide band applications for RLAN which would allow the use of wider channels to support very high throughput at 5350-5470 MHz while ensuring protection of incumbent services in the 5350-5470 MHz frequency range.

ADD USA/10/3

RESOLUTION ~~-[5GHz]-~~ (WRC-15)

Consideration of a Additional primary allocations to the mobile service ~~allocation~~ and identification for the implementation of wireless access systems (WAS) including radio local area networks (RLAN) in the 5350-5470 MHz frequency bands

The World Radiocommunication Conference (Geneva, 2003),

considering

- a) that since WRC-07 there has been tremendous growth in the demand for mobile broadband applications with multimedia capabilities;
- b) that in many developing markets the main delivery mechanism for broadband access is expected to be through mobile devices;
- c) that adequate and timely availability of spectrum and supporting regulatory provisions is essential to support future growth of mobile broadband systems;
- d) that the band 5 350-5 460 MHz is allocated worldwide on a co-primary basis to the Earth exploration-satellite service (active) (No. **5.448B**);~~;~~
- ~~e) that the band 5.350-5.460 MHz is also allocated worldwide on a primary basis to the space research service (active) (No. 5.448C), and;~~
- ~~f) that the band 5.350-5.460 MHz is allocated worldwide on a primary basis to the aeronautical radionavigation service (No. 5.449);~~
- eg) that the bands 5 350-5 470 MHz is also allocated worldwide on a primary basis to the radiolocation service (No. **5.448D**);
- hf) that the band 5 460-5 470 MHz is allocated worldwide on a co-primary basis to the radionavigation service (No. **5.449**);~~;~~
- ~~i) that the band 5.460-5.470 MHz is also allocated worldwide on a primary basis to the EESS (active), SRS (active), and radiolocation service (No. 5.448D);~~
- ~~j) that there is a need to protect the existing primary services in the 5.150-5.350 MHz, 5350-5470 MHz, and 5.470-5.725 MHz bands;~~
- ~~k) that studies have shown that sharing between incumbent services and mobile service applications in the frequency range 5.350-5.470 MHz is not possible with current mitigation techniques but may be possible if new or advanced mitigation techniques are developed that prove to be feasible and able to be fielded in commercially viable systems;~~
- ~~l) that there is a need to specify operational restrictions for WAS, including RLANs, in the mobile service in the band 5.350-5.470 MHz in order to protect incumbent service systems;~~
- ~~m) that the deployment density of WAS, including RLANs, will depend on a number of factors including intrasystem interference and the availability of other competing technologies and services;~~

noting

- a) that initial studies have begun in the ITU-R based on work for consideration of potential mobile allocations and identification for terrestrial mobile allocations under WRC-15 agenda item 1.1;
- b) that the regulatory provisions for RLANs to enable sharing in the frequency ranges 5150-5350 MHz and 5470-5725 MHz ~~are~~ insufficient to enable sharing in the 5350-5470 MHz frequency range but sharing may be possible if new or advanced RLAN mitigation techniques are deployed;

recognizing

- a) that WAS, including RLANs, play an important role in providing~~effective~~ broadband ~~service~~olutions;
- b) that ~~there is a need for administrations~~ it is important to ensure that WAS, including RLANs, protect incumbent service systems in the 5 350- 5470 MHz frequency bands meet the required mitigation techniques, for example, through equipment or standards compliance in conjunction with effective regulatory procedures,
- c) that the results of ITU-R studies indicate that the minimum spectrum requirement for RLAN using the 5 GHz frequency range in the year 2018 is estimated at 880 MHz. This figure includes spectrum of 455-580 MHz already utilised by non-IMT mobile broadband applications operating in the 5 GHz band range resulting in 300-425 MHz additional spectrum being required.
- d) that RLAN devices utilize the following frequency bands in the 5 GHz frequency range: 5 150-5 250 MHz, 5 250-5 350 MHz, 5 470-5 725 MHz and 5 725-5 850 MHz (in some countries)
- e) that a new international allocation to the mobile service in the 5 350-5 470 MHz frequency bands would facilitate contiguous spectrum for RLANs thereby enabling the use of wider channel bandwidths to support higher data throughput

resolves

- 1) to conduct, and complete in time for WRC-19, studies for ~~that WRC-19 consider~~ a new primary -mobile allocation and identification to WAS including RLAN in the 5350-5470 MHz frequency ~~range- bands~~ while ensuring the :
- 1— Protection of ~~current and future deployments of~~ incumbent services in the 5 350-5 470 MHz bands;
- 2— Consideration of effective operational requirements which can be implemented by WAS including RLAN to enable sharing with incumbent services;
- 2) to invite WRC-19 to consider the results of the above studies and take appropriate actions,

invites ITU-R

to conduct, and complete in time for WRC-19, the appropriate studies ~~leading to~~ on technical and operational ~~recommendations~~ issues to facilitate sharing between WAS including RLAN and the incumbent services.

invites administrations

to participate actively in these studies by submitting contributions to ITU-R.

ATTACHMENT

PROPOSAL FOR ADDITIONAL AGENDA ITEM FOR ~~CONSIDERATION OF AN ADDITIONAL ALLOCATION TO THE~~ MOBILE SERVICE ~~ALLOCATION AND IDENTIFICATION FOR RLAN~~ FOR THE IMPLEMENTATION OF WIRELESS ACCESS SYSTEMS INCLUDING RADIO LOCAL AREA NETWORKS IN THE 5350-5470 MHZ FREQUENCY BANDS

Subject: Proposed Future WRC Agenda Item for WRC-2019 for ~~consideration of a n additional allocation to the~~ -mobile service ~~allocation~~ and identification ~~for RLAN~~ for the implementation of wireless access systems including radio local area networks in the 5350-5470 MHz frequency bands

Origin: United States of America

Proposal: To ~~consider complete studies for a new primary allocation to the mobile service allocation~~ and identification ~~for RLAN~~ for the implementation of wireless access systems including radio local area networks in the 5350-5470 MHz frequency bands.

Background/reason:-

Initial studies conducted in Joint Task Group (JTG) 4-5-6-7 indicated that ~~sharing was not possible between RLANs and incumbent services in the 5350-5470 MHz band utilizing existing mitigation measures. the regulatory provisions for RLANs to enable sharing in the frequency ranges 5150-5350 MHz and 5470-5725 MHz are insufficient to enable sharing in the 5350-5470 MHz frequency range. However, sharing may be possible if new or advanced RLAN mitigation techniques are deployed. The existing mitigation techniques studied included a 200 mW power limit, indoor restriction, and Dynamic Frequency Selection (DFS) designed for the 5150-5350 MHz and 5470-5725 MHz frequency bands. Additionally, the same ITU-R Wworking Ppartyies 5A~~ began exploring possible new or additional RLAN mitigation techniques to enable sharing between RLANs and incumbent services in the 5350-5470 MHz frequency bands. Unfortunately, the WRC-15 study cycle provided insufficient time to complete the development and consideration of the proposed mitigation techniques before the JTG 4-5-6-7 completed its work. ~~and f~~ further study is required.

Radiocommunication services concerned: Earth Exploration-Satellite Service (active), Space Research Service (active), Aeronautical Radionavigation, Radiolocation and Radionavigation

Indication of possible difficulties: None foreseen.

Previous/ongoing studies on the issue: Studies are underway in WP 5A, ~~WP 5B and WP 7C~~ to examine RLAN mitigation techniques. Studies have been done in WP 5B and WP 7C to define protection criteria for the respective incumbent services. JTG 4-5-6-7 conducted initial sharing studies during WRC-15 study cycle.

Studies to be carried out by: SG 5 | *with the participation of:* SG 7

ITU-R Study Groups concerned: SG 5 and SG 7

ITU resource implications, including financial implications (refer to CVI26): Minimal

Common regional proposal: Yes/No *Multicountry proposal:* Yes/No

Number of countries:

Remarks
